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SOFTWARE ENGINEERING ENVIRONMENT

TOOL SET INTEGRATION

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ABSTRACT

Space Transportation System Division (STSD) Engineering has a program to promote excellence within the engineering function. This program resulted in a capital funded facility based on a VAX cluster called the Rockwell Operational Software Engineering System (ROSES). This paper concentrates on the second phase of a three phase plan to establish an integrated software engineering environment for ROSES. It discusses briefly phase one which establishes the basic capability for a modern software development environment to include a tool set, training and standards.

Phase two is tool set integration. The tool set is primarily off-the-shelf tools acquired through vendors or government agencies (public domain). These tools were placed into categories of software development. These categories are: 1) requirements, design and construction support, 2) verification and validation support (i.e. quality evaluation), 3) software management support. The integration of the tools set is being performed through concept prototyping and development of tools specifically designed to support the life cycle and provide transition from one phase to the next.

Tools that integrate category 1 tools are: 1) the Documentation Utility Package - supports the development of software development library products that meet DoD-STD-2167; 2) the Software Development File Manager - supports the tracking and reporting of incremental development of the software development library products; 3) the Life Cycle Traceability Matrix Manager - supports the automatic extraction of originating requirements and traceability of propagated products through a relational data base.

Tools that integrate category 2 tools are: 1) Evaluation Translators - supports the static analysis of software development library products; 2) Automatic Software Testing and Reporting (White/Black) - supports the automatic testing of software component's logic (white box) and CSCI requirements verification/validation (black box).

Tools that integrate category 3 tools are: 1) the Software Management Utility - supports the control of baselined products and development configuration items; 2) the Integrated Software Change Control Management System - supports the tracking and reporting of changes to configuration items from change inception through release of product; 3) the Information Management System - supports user identification and acquisition of reference material and reusable software components and their documentation; 4) the Project Performance Measurement System - supports matrix management based on the earned value technique of schedule/cost tracking and reporting.

Phase three of the plan is briefly discussed and it applies advance technology to software development through the application of AI expert system concepts.